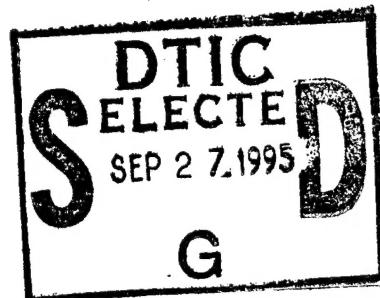


DEVELOPMENT OF AN ULTRA-SAFE RECHARGEABLE LITHIUM-ION BATTERY



Contract # N00014-94-C-0141
ARPA Order # 9332004arp01/13 APR 1994/313ES

R & D Status Report #3

Reporting Period: 16 December 1994 - 15 January 1995

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Submitted by:

The Electrofuel Manufacturing Company Inc.

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DEVELOPMENT OF AN ULTRA-SAFE RECHARGEABLE LITHIUM-ION BATTERY

R&D STATUS REPORT 1931-1003/0

ARPA Order No.: 9332004arp01/13APR1994/313ES

Program Code No.: ARPA-BAA93-32

Contractor: The Electrofuel Manufacturing Company Inc.

Contract No.: N00014-94-C-0141 Contract Amount: \$1271728.

Effective Date of Contract: August 15, 1994

Expiration Date of Contract: February 14, 1996

Principal Investigator: J.K. Jacobs

Telephone No.: (800) 388-2865

Short Title of Work: Lithium-ion Battery Development

Reporting Period: December 16, 1994 to January 15, 1995

Description of Progress:

Fabrication of batteries using the prototype and pilot lines will require substantially larger quantities of active cathode materials (lithium manganese oxides and alternate lithiated transition-metal oxides). Thus, a suitable furnace for the high temperature reaction had been planned, and designed. Construction of this equipment is now complete. The furnace has been commissioned and is currently undergoing testing with 1, 2, and 5 kg batch sizes.

The design of the prototype web handling equipment is now complete and fabrication has started. It will be in the form of a three-section modular unit with an unwind/coating module, a hot-air drying tunnel, and a multipurpose (laminating, slitting, rewind, strip-stack, etc.) module. All are of cantilever design except the laminator, and are designed to handle webs from 1 to 8 inches wide.

Studies leading to a stack-pressure control methodology have been successfully completed. This includes separator design and verification and current collector adhesion verification. The separator is a gel-impregnated microporous polymer with good mechanical strength and penetration resistance.

Construction of the baseline button cells is well underway with a group of 20 cells scheduled to be completed in early February.

Forming cycles and a characterization cycle will be performed immediately thereafter.

Construction of the first hand-crafted cells is starting, slightly ahead of schedule. These will be made on the lab bench in single-sheet form for verification of assembly method. Although it is not expected that these cells will have representative performance characteristics (due to inevitable variations and imperfections in the hand-crafting process) cell cycling will be attempted as material becomes available.

Change in Key Personnel: None

Summary of Substantive Information Derived from Special Events:
None:

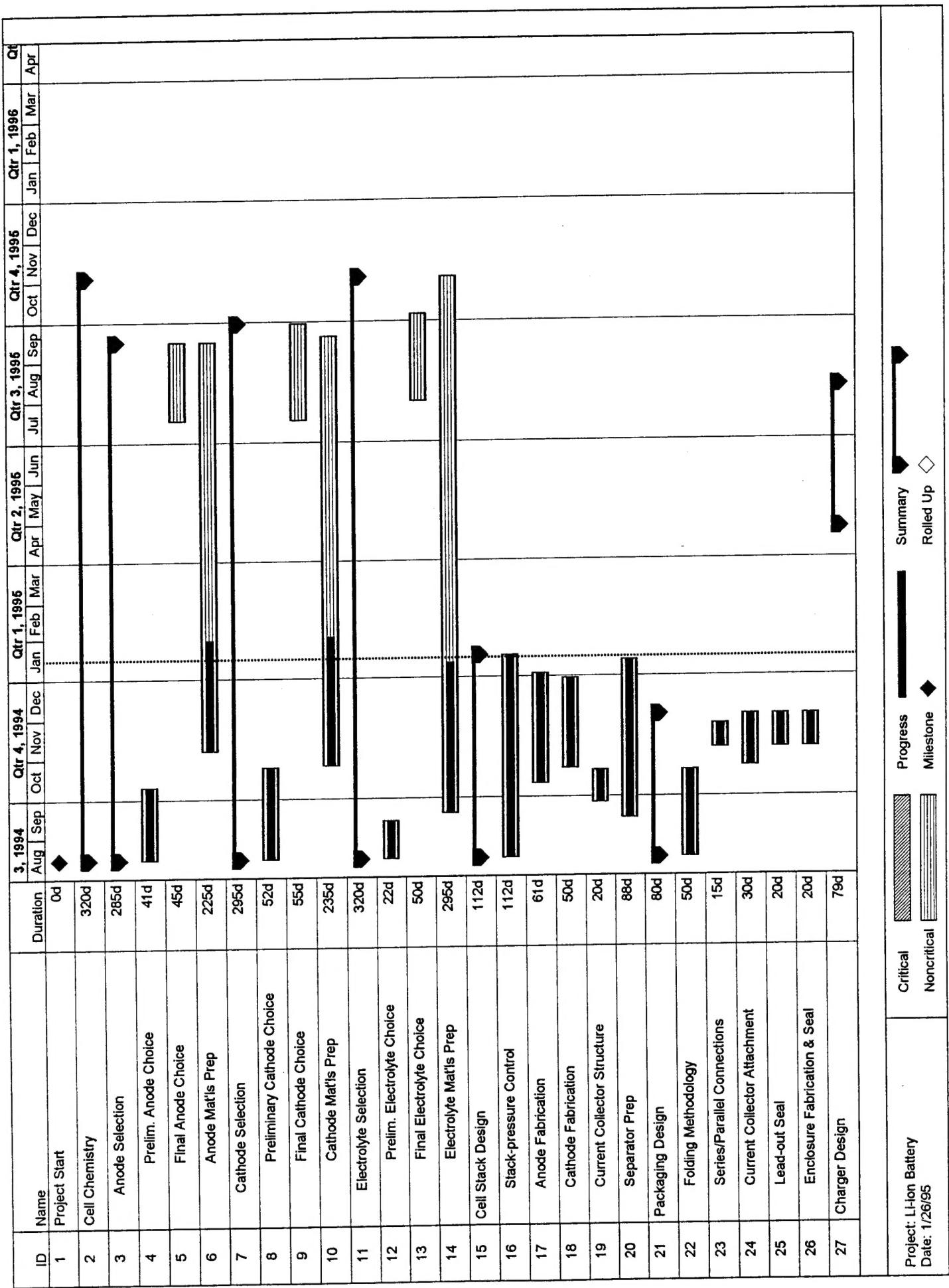
Problems Encountered and/or Anticipated: None

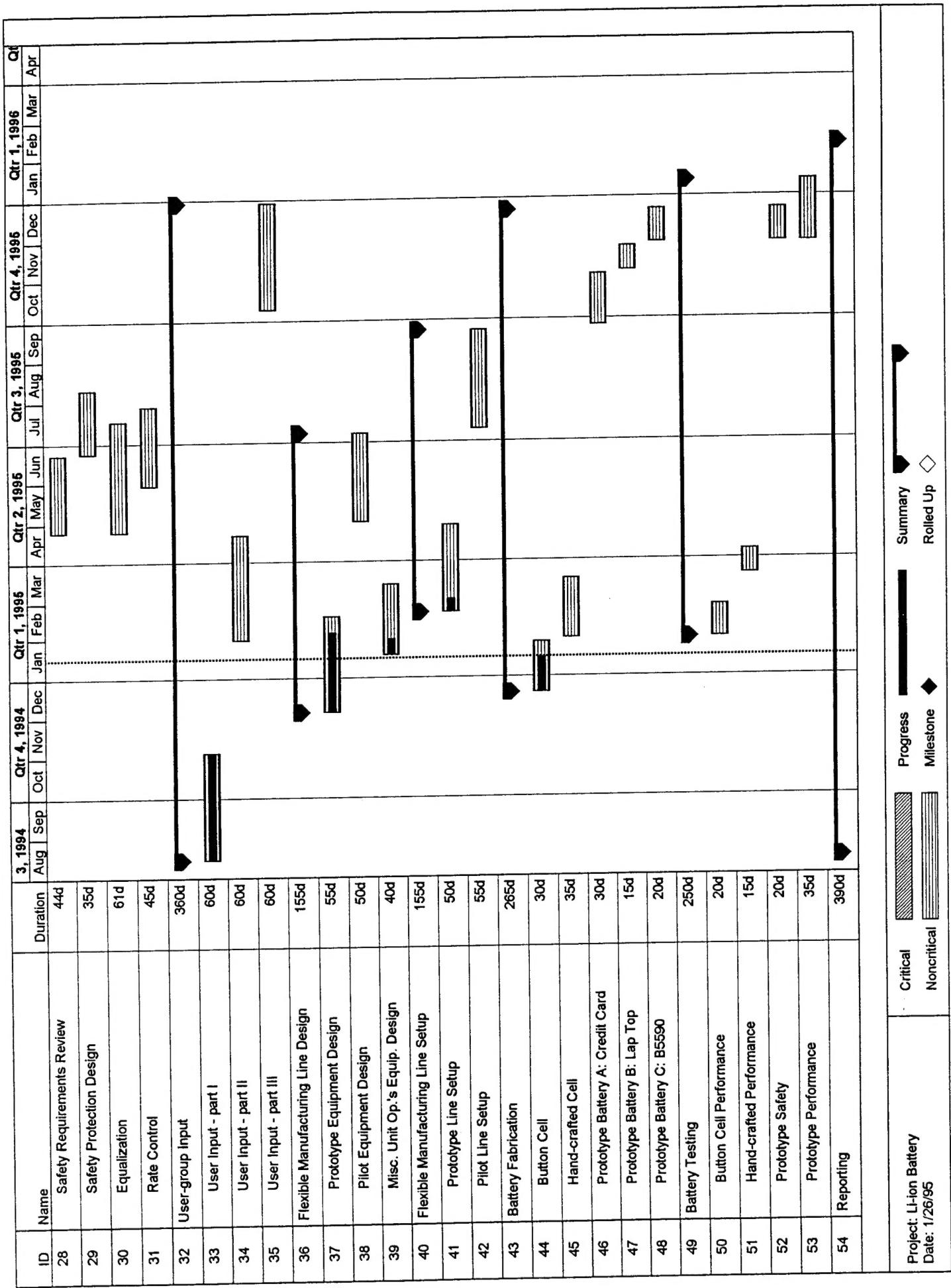
Action Required by the Government: None

Fiscal Status:

	Total Est- imate of Program	US Govt Funding Obliga- tion	Electro fuel Contri- bution
(1) Amt. currently provided on contract:	\$1630421	\$1271728	\$358693
(2) Expenses & commitments to date:	\$ 239916	\$ 187134	\$ 52782
(3) Funds required to complete work:	\$1390505	\$1084594	\$305911

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ID	Name	Duration	3, 1994			Qtr 4, 1994			Qtr 1, 1995			Qtr 2, 1995			Qtr 3, 1995			Qtr 4, 1995			Qtr 1, 1996			
			Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
55	Progress	360d																						
56	Button Cell Report	15d																						
57	Prototype Battery Test Report	20d																						
58	Final Report	20d																						
59	Project Complete	0d																						

Project: Li-Ion Battery
Date: 1/26/95

Critical Noncritical

Milestone

Progress

Summary

Rolled Up

